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## RESULTS OF THE ALCOA FOUNDATION-SURINAME EXPEDITIONS. IV. A NEW SPECIES OF BAT OF THE GENUS *MOLOSSOPS* (MAMMALIA: MOLOSSIDAE)

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### ABSTRACT

A new species of molossid bat of the genus *Molossops* is described from Suriname. The new species is a member of the subgenus *Molossops* where it is distinguished from the other two member species, *temminckii* and *aequatorianus*, by larger external and cranial size. A single specimen of the species was taken in northern Suriname in an area of savannah and secondary forest.

### INTRODUCTION

Three species of the molossid genus *Molossops* (*planirostris*, *greenhalli*, and *abrasus*) are included in the 85 species of bats known to occur in Suriname (Husson, 1962, 1978; Genoways and Williams, 1979; Williams and Genoways, 1980). Among the specimens taken during our expedition to Suriname in 1977 is a specimen of *Molossops* that apparently does not belong to one of these species or any other described species in the genus.

Our study of the relationship of the new species has led us to review the relationships of *Molossops* and *Cynomops*. We have concluded

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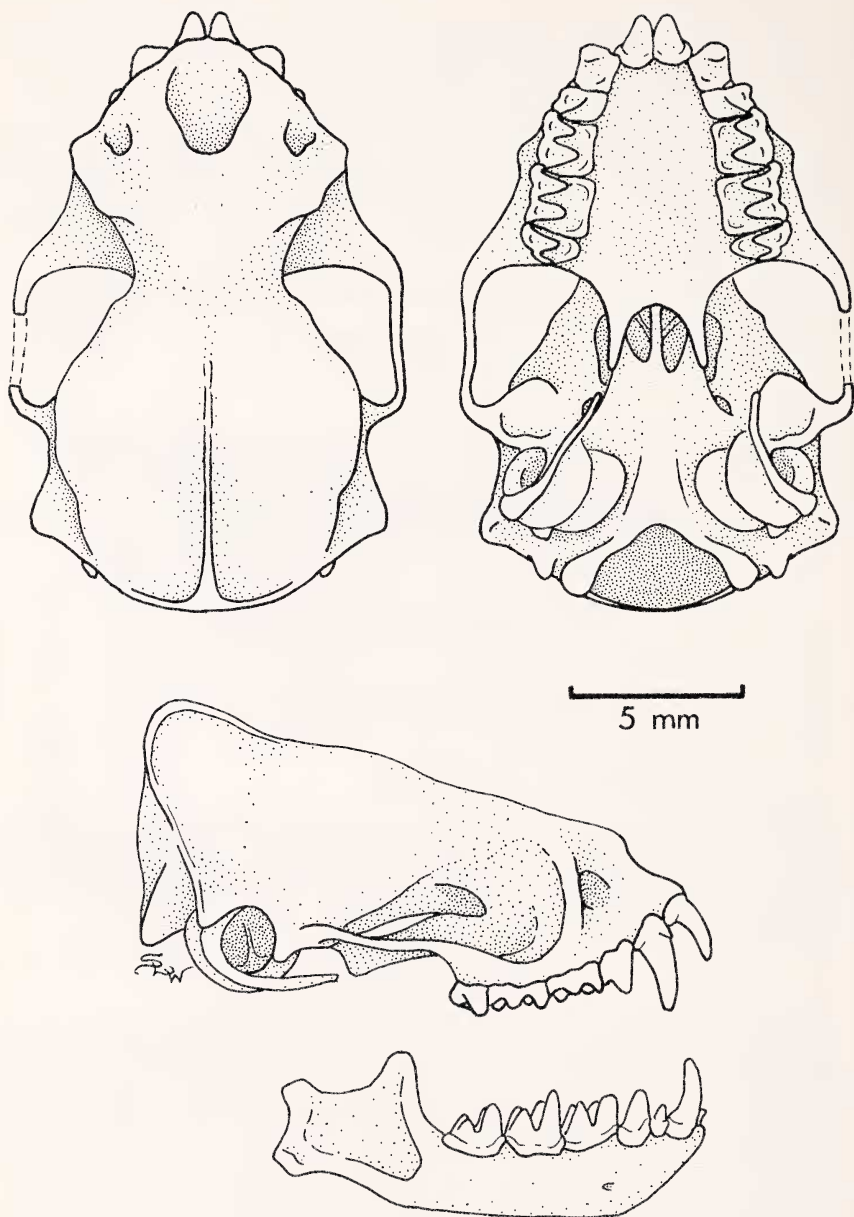


Fig. 1.—Dorsal, ventral, and lateral views of the cranium and lateral view of the lower jaw of the holotype of *Molossops neglectus* (CM 53864).

that these taxa should be considered as distinct subgenera as was done by Cabrera (1958) and Goodwin and Greenhall (1961) based primarily upon the characters given by Thomas (1920). Gardner (1977) documented the karyotypical differences between these groups, but he did not draw any final conclusions as to their relationships. We believe that the new species is a member of the subgenus *Mollossops* because it shares many characters with *M. temminckii*. The new species is named and described below.

#### SYSTEMATICS

##### *Mollossops (Mollossops) neglectus*, new species

*Holotype*.—Adult female, skin and skull, no. 53864 Carnegie Museum of Natural History (CM); 1 km S, 2 km E Powaka, Suriname, Suriname (5°25'N, 55°03'W); obtained 10 August 1977 by Stephen L. Williams; original number 2703.

*Distribution*.—Known only from the type locality.

*Diagnosis*.—Size large for the subgenus (Fig. 1; Table 1); two lower incisors; M<sup>3</sup> complex with a third commissure making the tooth broader labially than lingually; M<sub>3</sub> complex with the talonid composed of two cusps; ears pointed; color of the venter uniform.

*Measurements*.—External measurements of the holotype are as follows: total length, 89; length of tail, 29; length of hind foot, 7; length of ear from notch, 14; length of calcar, 12.3. Length of forearm and cranial measurements for *M. neglectus* as compared with other species of *Mollossops* are given in Table 1.

*Description*.—Hairs of the dorsum 3.0 to 3.5 mm long; base of hair pale yellowish-white; remainder of hair shaft Mummy Brown (capitalized color terms from Ridgway, 1912). Hairs on the venter about 3.0 mm long; basal portion of the hair shaft yellowish-white; overall coloration of the venter Buffy Brown, paler than dorsum. Membranes dark blackish-brown.

Ears pointed rather than rounded as in most molossids; more nearly resembling a vespertilionid ear. Antitragus about 2.3 mm, rounded, about as wide as high; tragus about 1.5 mm with a broadly rounded tip. Free portion of tail about one-third the length of entire tail.

Dental formula 1/1, 1/1, 1/2, 3/3. Upper incisors relatively large, being over half the length of the canines, and filling space between them. Lower incisors small, bifid (Fig. 2). First lower premolar considerably smaller than second. Third upper molar complex having a third commissure—a postcentrocrista extends from the mesostyle to a relatively well-developed metacone; postcentrocrista about two-thirds the length of the precentrocrista (dental nomenclature from Phillips, 1971). Third lower molar also complex; talonid composed of two cusps, a hypoconid and an entoconid with associated entoconid.

Sagittal crest present, forming a helmet at occiput; profile of skull slopes up from nasal aperture to the posterior end of the helmet; space between nasal aperture and lacrimal ridge relatively broad (3.0 mm).

*Comparisons*.—*Mollossops neglectus* shares many characters with *M. temminckii*; however, the two are easily distinguished on the basis

Table 1.—External and cranial measurements of selected female specimens of seven species of *Molossops*.

Catalog no. and sex	Locality	Length of forearm	Greatest length of skull	Gondybasal length	Zygomatic breadth	Postorbital breadth	Breadth of braincase	Length of maxillary toothrow	Lacrimal breadth	Mastoid breadth	Breadth across upper molars	Length of mandibular toothrow	Length of mandible	
	<i>Molossops neglectus</i>													
CM 53864	♀	1 km S, 2 km E Powaka, Suriname	35.1	17.1	15.4	11.0	4.1	8.8	6.3	7.5	10.0	7.7	7.5	12.2
	<i>Molossops temminckii</i>													
USNM 507210	♀	Finca Buque, Villavicencio, Meta, Colombia	30.5	14.2	12.6	8.5	3.9	7.3	5.2	5.7	8.4	6.3	5.7	9.2
AMNH 211254	♀	20 km S San Joaquín, Beni, Bolivia	29.6	14.0	12.8	9.0	3.8	7.2	5.0	5.8	8.6	6.5	5.6	10.1
AMNH 211255	♀	20 km S San Joaquín, Beni, Bolivia	29.7	14.4	13.0	9.1	3.8	7.4	5.2	5.7	8.4	6.6	5.8	10.1
USNM 121436	♀	Sapucay, Paraguay	27.7	13.2	12.3	8.7	3.7	6.8	4.8	5.7	8.0	6.2	5.3	8.8
AMNH 217567	♀	Mbovevo, Paraguay	30.6	14.2	13.0	9.1	3.7	7.2	5.2	6.1	8.3	6.4	5.6	10.5
AMNH 205651	♀	15 km S Paysandu, Río Negro, Uruguay	30.8	14.6	13.4	9.4	3.8	7.4	5.7	6.0	8.7	6.8	6.0	10.2
CM 42961	♀	5 km S Estancia Sta. Catalina, Formosa, Argentina	30.4	14.1	12.7	8.3	3.7	7.0	5.0	5.5	7.9	6.3	5.5	9.3
CM 42963	♀	5 km S Estancia Sta. Catalina, Formosa, Argentina	31.5	14.5	13.2	8.8	3.7	7.1	5.3	5.9	8.5	6.5	5.9	10.0
CM 42966	♀	6 km SW Santa Victoria, Salta, Argentina	31.0	13.2	12.2	8.5	3.4	6.9	4.8	5.8	7.9	6.2	5.3	9.6
CM 42972	♀	6 km SW Santa Victoria, Salta, Argentina	31.4	14.3	13.3	8.9	3.6	7.0	5.4	6.2	8.0	6.5	5.5	10.2

Table 1.—Continued.

Catalog no. and sex	Locality	Length of forearm	Greatest length of skull	Condylabasal length	Zygomatic breadth	Postorbital breadth	Breadth of braincase	Length of maxillary toothrow	Lacrimal breadth	Mastoid breadth	Breadth across upper molars	Length of mandibular toothrow	Length of mandible
<i>Molossops planirostris</i>													
AMNH 234455 ♀	Fuerte Olimpo, Olimpo, Paraguay	30.8	16.1	15.0	10.3	4.2	7.6	6.0	6.6	9.8	7.2	6.4	11.7
AMNH 234459 ♀	Fuerte Olimpo, Olimpo, Paraguay	31.3	15.7	14.4	10.7	4.3	7.8	5.8	6.7	9.8	7.1	6.4	11.8
AMNH 94649 ♀	Río Tapojoz, Igarapé, Brabo, Brazil	33.9	16.9	15.3	11.0	4.3	8.2	6.2	6.8	10.4	7.5	6.8	11.9
AMNH 94650 ♀	Río Tapojoz, Igarapé, Brabo, Brazil	32.5	16.4	15.0	10.9	4.3	8.2	6.1	6.8	10.3	7.5	6.6	11.6
AMNH 79745 ♀	Río Negro, near Manaos, Brazil	32.5	16.6	15.4	11.1	4.4	8.6	5.8	6.7	11.0	7.7	6.3	11.9
AMNH 93881 ♀	Río Amazon, Faro, Brazil	32.1	15.9	14.5	10.3	4.2	8.1	5.7	6.6	9.7	6.8	6.3	11.1
USNM 409512 ♀	Río Manapiare, San Juan, T. F. Amazonas, Venezuela	32.2	15.8	14.7	10.4	4.1	8.0	5.7	7.0	9.9	7.2	6.2	10.6
USNM 409514 ♀	Río Manapiare, San Juan, T. F. Amazonas, Venezuela	31.4	16.0	14.8	10.6	4.2	8.3	5.7	6.3	10.2	7.0	6.2	10.7
USNM 409516 ♀	Río Manapiare, San Juan, T. F. Amazonas, Venezuela	32.3	16.0	15.0	10.8	4.1	8.0	5.9	6.6	10.0	7.1	6.3	10.5
USNM 409517 ♀	Río Manapiare, San Juan, T. F. Amazonas, Venezuela	33.0	16.5	15.3	10.8	4.2	8.3	5.9	6.9	10.3	7.4	6.6	11.0
<i>Molossops paranus</i>													
USNM 387744 ♀	59 km SE El Dorado, Bolivar, Venezuela	31.0	16.3	14.9	10.7	4.3	8.2	5.7	6.6	10.3	7.1	6.3	10.4

Table 1.—Continued.

Catalog no. and sex	Locality	Length of forearm	Greatest length of skull	Condylabasal length	Zygomatic breadth	Postorbital breadth	Breadth of brancase	Length of maxillary toothrow	Lacrimal breadth	Mastoid breadth	Breadth across upper molars	Length of mandibular toothrow	Length of mandible
<i>Molossops greenhalli</i>													
AMNH 176285 ♀	Port-of-Spain, Trinidad	33.4	17.5	15.8	11.6	4.4	8.4	6.3	7.1	11.1	7.7	6.9	12.4
AMNH 176286 ♀	Port-of-Spain, Trinidad	33.9	17.4	15.7	—	4.2	8.2	6.2	6.9	10.5	7.4	6.9	11.8
AMNH 207071 ♀	Port-of-Spain, Trinidad	34.5	16.9	15.3	11.2	4.3	8.1	5.9	7.1	10.5	7.5	6.6	12.1
CM 64378 ♀	Grassalco, Nickerie, Suriname	32.3	17.1	15.6	11.1	4.5	8.6	6.0	7.0	10.3	7.8	6.6	11.6
CM 64379 ♀	Grassalco, Nickerie, Suriname	32.5	17.0	15.4	11.3	4.6	8.5	5.9	6.9	10.8	7.7	6.4	11.8
<i>Molossops aequatorianus</i> *													
MNCM 683 ♀	Babahoyo, Los Ríos, Ecuador	36.0	14.5	13.4	10.0	4.0	8.4	5.4	5.7	—	—	6.0	10.4
<i>Molossops abrasus</i>													
USNM 387742 ♀	59 km SE El Dorado, Bolivar, Venezuela	41.3	20.4	18.5	13.7	4.9	9.8	7.3	8.2	13.5	9.1	8.3	13.8
USNM 387743 ♀	59 km SE El Dorado, Bolivar, Venezuela	41.5	21.1	19.4	14.1	5.3	10.2	7.3	9.0	13.7	9.4	8.3	14.6
AMNH 94625 ♀	Rio Tapojos, Igarapé, Brabo, Brazil	41.0	21.5	19.0	14.2	4.9	9.9	7.4	8.5	13.8	9.4	8.6	15.6
AMNH 94628 ♀	Rio Tapojos, Igarapé, Brabo, Brazil	42.0	21.2	19.3	14.3	5.0	9.9	7.5	8.9	14.4	9.4	8.8	16.0
AMNH 236220 ♀	Nova Gravada, São Paulo, Brazil	41.4	19.4	17.7	12.9	4.6	9.6	6.9	8.5	12.7	8.9	7.7	14.0
AMNH 114933 ♀	Sapucay, Paraguay	43.5	20.7	18.8	13.8	4.9	10.3	7.4	8.7	13.8	9.4	8.3	14.8

\* Measurements from Cabrera (1917).

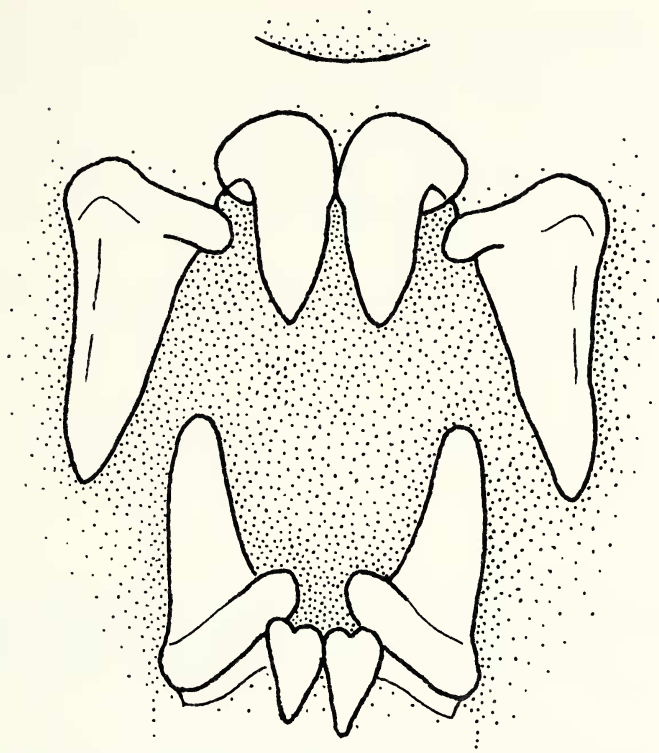


Fig. 2.—Front view of the skull of *Molossops neglectus* (CM 53864), showing upper and lower incisors and canines.

of size as indicated by external and cranial dimensions. In the 12 measurements examined, there was overlap only in postorbital breadth (Table 1; Vizotto and Taddei, 1976). The metacone of  $M^3$  may be better developed in *M. neglectus* than in *temminckii*; sagittal crest better developed in *neglectus*; helmet essentially lacking in *temmenckii*.

*M. neglectus* is distinguished from *abrasus*, *greenhalli*, *planirostris*, and *paranus*, by having only two lower incisors rather than the usual four found in the other species (a few individuals have only two incisors); third upper and lower molars more complex with a third commissure on  $M^3$  and two cusps on the talonid of  $M_3$  as compared with  $M^3$  composed of only two commissures (lacking postcentrocrista and metacone) and the talonid of  $M_3$  with only one cusp (hypoconid); ears pointed instead of rounded.

In addition, *M. neglectus* is much smaller than *M. abrasus* in all



measurements considered and lacks the distinct patches of fur along the forearm and metacarpels found in that species. In *planirostris*, the chin, neck, and a broad longitudinal band on the chest and abdomen are white or yellowish-white contrasting with the rust brown sides of the venter, whereas in *neglectus* the venter is uniformly Buffy Brown. *M. neglectus* is distinguished from *greenhalli* by having a helmet at the occiput (lacking in *greenhalli*), a sloping cranial profile (nearly flat profile in *greenhalli*), and a relatively longer distance from the nasal aperture to the lacrimal ridge.

The exact taxonomic status of *M. aequatorianus* is uncertain; it was placed in the subgenus *Molossops* by Cabrera (1958). However, it is easily distinguished from *M. neglectus* by its overall smaller size (Table 1).

*Etymology.*—The name *neglectus* is a Latin word meaning "overlook." We have chosen this name because the specimen was overlooked in our collection for more than two years before its significance was understood, and because this species has not been found previously in spite of extensive work on bats in Suriname and northern South America.

#### DISCUSSION

Species of the genus *Molossops* (Goodwin, 1958) appear to fall into two distinct groups based on dental, external, and karyological characteristics. The amount of morphological distinctness is sufficient to warrant recognition of these groups as subgenera (see also Cabrera, 1958; Goodwin and Greenhall, 1961). The subgenus *Cynomops* consists of the species *abrasus* (see Carter and Dolan, 1978, for use of this name), *greenhalli* (Goodwin, 1958), *planirostris* (including *milleri*, Koopman, 1978), and *paranus* (previously, and also recently by Koopman, 1978, considered to be a subspecies of *planirostris*, but recognized as a distinct species by Handley, 1976, although he gave no basis for this recognition). The subgenus *Molossops* consists of the species *temminckii*, *neglectus*, and possibly *aequatorianus*. The exact status of *M. aequatorianus*, is uncertain because many of the characters needed for subgeneric placement are not given in the original description (Cabrera, 1917). However, Cabrera (1958) placed this species in the subgenus *Molossops*. If this placement is correct, *aequatorianus* may represent a western subspecies of *temminckii* based on relative size.

*Molossops neglectus*, known only from the type locality, differs from *aequatorianus* and *temminckii* in being much larger. It is also geographically isolated from them. *M. aequatorianus* is known only from western Ecuador; *M. temminckii* is known from Uruguay, Paraguay, Argentina, Brazil, Bolivia, Peru, and Colombia (Vieira, 1955; Cabrera, 1958; Pine et al., 1970; Vizotto and Taddei, 1976; Koopman, 1978; also see list of Specimens Examined). It is possible that future



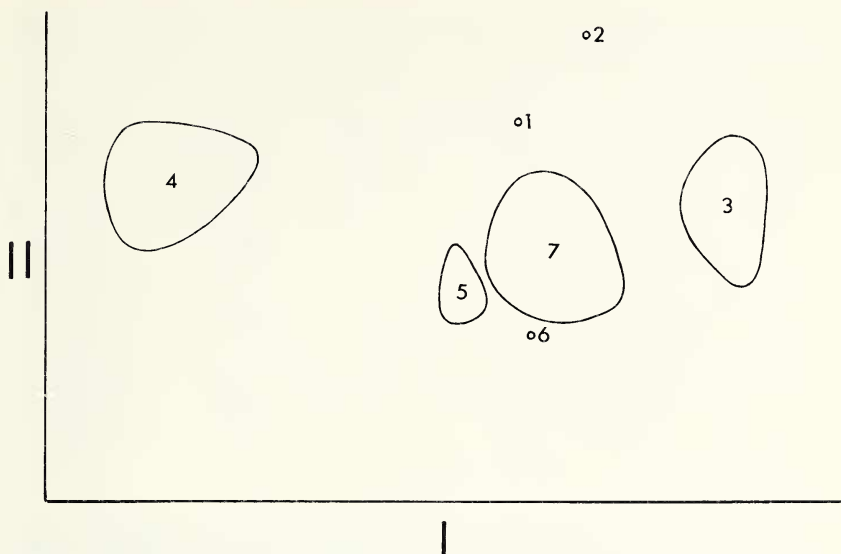


Fig. 3.—Plot of first two canonical variates, showing phenetic relationships among samples of female *Molossops*. Numbers 1, 2, and 3 (subgenus *Molossops*) represent *neglectus*, *aequatorianus*, and *temminckii*, respectively. Numbers 4, 5, 6, and 7 (subgenus *Cynomops*) represent *abrasus*, *greenhalli*, *paranus*, and *planirostris*, respectively.

investigations in South America will show that *M. neglectus* and *M. temminckii* intergrade but we believe that the magnitude of the differences between the two and the lack of any evidence of intergradation warrant our recognition of *M. neglectus* as a distinct species.

Canonical analysis provides a mechanism for graphically representing phenetic relationships among samples with the characters weighted by variance-covariance analysis (Fig. 3). In Table 2, characters used in this analysis are listed from the most useful to the least useful in discriminating groups. Variates I and II in the analysis of species of *Molossops* accounted for 84.9% and 5.6% of the total dispersion, respectively. The character with a high canonical coefficient for Variate I (values greater than 1.5) was length of mandibular toothrow. Those with high negative values include, in decreasing order of value, zygomatic breadth, greatest length of skull, and postorbital constriction. In Variate II, positive values of more than 1.5 were exhibited by length of mandibular toothrow, breadth of braincase, and length of mandible; high negative values were shown for greatest length of skull and zygomatic breadth.

In Fig. 3, the seven species of *Molossops* are arrayed along Variate

Table 2.—Variables used in discriminant function analysis of South American female *Molossops* (mastoid breadth and breadth across upper molars omitted because these measurements not available for holotype of *M. aequatorianus*). Characters are listed in order of their usefulness in distinguished groups, with the character with the greatest between-groups variance and the least within-groups variance being selected first. Other traits are ranked using the same criteria. The statistics are recalculated at each step.

Step	Character	F-value	U-statistic
1	Zygomatic breadth	214.20	0.0258
2	Length of forearm	58.57	0.9975
3	Length of mandible	31.35	0.0036
4	Lacrimal breadth	21.26	0.0021
5	Length of mandibular toothrow	16.20	0.0013
6	Greatest length of skull	13.54	0.0008
7	Breadth of braincase	11.78	0.0005
8	Postorbital constriction	10.45	0.0003
9	Condylbasal length	9.48	0.0002
10	Length of maxillary toothrow	8.37	0.0002

I primarily on the basis of size with the small *M. temminckii* at the right of the plot and the large *M. abrasus* at the left. Each species forms a relatively distinct group. *M. planirostris* and *paranus* are the closest to each other of any of the taxa studied (the one specimen of *paranus* used was identified and reported by Handley, 1976). *M. neglectus* is well separated from the other members of the subgenus *Molossops* and is actually closer to *planirostris* and to a lesser extent *greenhalli*. This would be expected because these are the two species which are closest in size to *neglectus*. The position of the holotype of *M. aequatorianus* would tend to support the specific status of this species (it must be remembered, however, that this was the only specimen not measured by us).

Our specimen was a female that weighed 10 g and evinced no reproductive activity when captured on 10 August 1977. The habitat of the collecting locality was the boundary between savannah and a small forested area. The savannah had scattered shrubbery; the forested area was mostly secondary growth. Other species of bats collected at that locality included *Carollia perspicillata*, *Rhinophylla pumilio*, *Artibeus cinereus*, two large species of *Artibeus*, *Chiroderma trinitatum*, *C. villosus*, *Uroderma bilobatum*, *Vampyressa bidens*, and *Vampyrops helleri*.

#### SPECIMENS EXAMINED

*Molossops neglectus* (1).—SURINAME: 1 km S, 2 km E Powaka, Suriname, 1 (CM).

*Molossops abrasus* (8).—BRAZIL: Rio Tapojos, Igarapé Brabo, 4 (AMNH); Nova Gravada, São Paulo, 1 (AMNH). PARAGUAY: Sapucay, 2 (1 AMNH, 1 MCZ). VENEZUELA: 59 km SE El Dorado, Bolivar, 1 (USNM).

*Molossops greenhalli* (5).—SURINAME: Grassalco, Nickerie, 2 (CM). TRINIDAD: Port-of-Spain, 3 (AMNH).

*Molossops pararus* (1).—VENEZUELA: 59 km SE El Dorado, Bolivar, 1 (USNM). (Identification based upon Handley, 1976.)

*Molossops planirostris* (21).—BRAZIL: Rio Amazon, Faro, 1 (AMNH); Rio Madeira, Rosarinho, 1 (AMNH); Rio Negro, near Manaus, 1 (AMNH); Rio Tapojos, Aramanay, 2 (AMNH); Rio Tapojos, Caxiricatuba, 1 (AMNH); Rio Tapojos, Igarapé Brabo, 2 (AMNH); Rio Tapojos, Pinhy, 2 (MCZ); Rio Tapojos, Tauary, 2 (MCZ). PARAGUAY: Fuerte Olimpo, Olimpo, 2 (AMNH). VENEZUELA: Maripa, 1 (AMNH); Rio Manapiare, San Juan, T. F. Amazonas, 6 (USNM).

*Molossops temminckii* (32).—ARGENTINA: Rio Porteño, 5 km S Estancia Sta. Catalina, Formosa, 3 (CM); Yuto, Jujuy, 4 (AMNH); El Breal, 6 km SW Santa Victoria, Salta, 3 (CM). BOLIVIA: 20 km S San Joaquín, 2 (AMNH). COLOMBIA: Finca Buque, Villavicencio, Meta, 2 (USNM). PARAGUAY: Mbovevo, 4 (AMNH); Misiones, 40 km S San Ignacio, Boquerón, 2 (AMNH); 75 km N Line Camp, Juan de Zalazar, Boquerón, 5 (UCONN); km 290 Trans-Chaco, Pres. Hayes, 2 (UCONN); Sapucay, 3 (USNM). PERÚ: Boca Rio Curaray, Loreto, 1 (AMNH). URUGUAY: Arroyo Negro, 15 km S Paysandu, Dept. Rio Negro, 1 (AMNH).

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